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EXAMINER

KOSLOW, CAROL M

ART UNIT PAPER NUMBER

1755

DATE MAILED: 08/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/618,144

Applicant(s)

ITO ET AL.

Examiner

C. Melissa Koslow

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,7,8,10-16,20,24 and 26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,7,8,10-16,20 and 24 is/are rejected.
- 7) ☒ Claim(s) 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

This action is in response to applicants' amendment of 29 June 2005. The drawings of 29 June 2005 and the amendments to the specification have overcome the objections to the drawings and the specification. The amendment to the claims have overcome the 35 USC 112 rejection and the art rejections over U.S. patent 3,541,019; 6,576,156 and 5,518,655. The rejection of claims 1 and 24 over U.S. patent 5,985,176; 6,039,894 or 6,180,029 is withdrawn due to the amendment to claim 1. Applicants' arguments with respect to the remaining rejection have been fully considered but they are not persuasive.

The explanation of the relevancy is part of the references and should not be listed separately. The explanations have been considered but have a line drawn through its listing.

The Japanese references cited in the information disclosure statement of 18 April 2005 have been considered with respect to the provided abstracts and JP 03-149286 and JP 2000-96048 have also been considered with respect to the provided explanations.

Claims 7, 8 and 10-16 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claimed calcining process of a first calcining step where there is insubstantial fusing of the wet silica and a second calcining step is new matter. The specification and original claims 17 and 18 teach a calcining process having a first calcining step where there is insubstantial fusing of the wet silica, mixing a sintering inhibitor with the calcined material and then calcining the mixture at a higher temperature than in the first step to enhance the crystallinity of the phosphor. These teachings do not support the newly claimed calcining process.

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Claim 24 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

There is a question of whether the process of claim 7 will produce a phosphor having the properties of claim 1 or not since comparative example 2 is the process of claim 7 and it does not produce the phosphor of claim 1.

Claims 7, 11 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 7 and 12 are wording to imply there is only one metallic element, while Claim 11 teaches there is at least one metallic element. This discrepancy in the number of metallic elements in the process and thus the resulting phosphor needs to be clarified.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-3, 7, 8, 11-16, 20 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 00/71636.

This reference teaches zinc silicate phosphors particles where the particles are spherical, uniform particles having a particle size of less than 1 micron (col. 5, lines 16-17 and fig. 1), which means shape of the particles is equal and the coefficient of variation of particle size distribution is essentially non-existent. The phosphor is produced by forming colloidal silica hydrate particles, adding these particles to an aqueous solution of zinc and manganese ions, adding oxalic acid as a precipitant to precipitate zinc and manganese oxalates, calcining the

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resulting mixture and then recalcining the calcined product. This process differs from that claimed in that the colloidal silica hydrate particles are not dispersed in a liquid before being added to the zinc and manganese solution. One of ordinary skill would have found it obvious to mix an aqueous slurry of the individual components since the order of mixing is not critical. *In re Gibson*, 39 F.2d 975, 5USPQ 230 (CCPA 1930) (Selection of any order of mixing ingredients is *prima facie* obvious.). The reference teaches the activator is homogeneously distributed throughout the particles and all the particles have the formula Zn_2SiO_4 . Thus one of ordinary skill in the art would expect the particles to have a coefficient of variation of inter-particle distribution of content of the elements to overlap the claimed range and that all the particle would have this distribution, absent any showing to the contrary. The reference suggests the claimed particles, since the size range of less than 1 micron overlaps the claimed range. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960).

While the declaration shows that example 1 of the reference does not have the compositional properties of claims 1 and 3, there has been no showing that there is no possible overlap of the claimed properties. In view of the fact that the values in the declaration are differ from the claimed ranges by a value of 5%, this declaration would lead one of ordinary skill in the art expect an overlap in compositional properties especially since the taught calcining temperatures ranges fall within those disclosed by applicants in their specification and one of

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ordinary skill would not be expect the order of mixing to affect the final product, absent any showing to the contrary. The rejection is maintained.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 5,985,176; 6,039,894 or 6,180,029.

All three of these references teach spherical silicate phosphors. The mean particle size range in U.S. patent 5,985,176 is 0.1-3 microns, which overlaps the claimed range. The mean particle size range in U.S. patent 6,039,895 can be 0.1-1 micron, which falls within the claimed range. The mean particle size range in U.S. patent 6,180,029 is 0.3-5 microns, which overlaps the claimed range (claim 1). Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). While the taught particles are produced by a different process than that of claim 7, claim 20 is a product-by-process claims. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Applicants only argued that these references do not teach the process of claim 7 or the phosphor of claim 1. The amendment to claim 1 has overcome the rejections over claims 1 and 24 since the references do not give any indication as to the coefficient of interparticle composition variation. Applicants did not address the rejection over claim 20 and there has been

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no showing that the process of claim 7 produces phosphors different from those taught. The rejection is maintained.

Claims 7, 8, 10, 11, 14-16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 5,611,961.

This reference teaches producing a manganese doped zinc silicate phosphor by admixing a colloidal silica dispersed in water, such as Ludox AM, which has a surface area of 230 m²/g, with a zinc precursor and manganese precursor to form an aqueous dispersion and calcining the mixture and then recalcining the calcined product.. The reference does not teach the claimed order of producing the claimed precursor mixture. One of ordinary skill in the art would have found it obvious to mix an aqueous slurry of the individual component since the order of mixing is not critical. *In re Gibson*, 39 F.2d 975, 5USPQ 230 (CCPA 1930) (Selection of any order of mixing ingredients is *prima facie* obvious.). The reference suggests the claimed method and particles.

Applicants' argument is not convincing since fumed or colloidal silica dispersed in water reads upon the claimed "wet silica". It is noted that claim 1 was not rejected over this reference. The rejection is maintained.

Claim 26 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The claimed process for making silicate based phosphors where a sintering inhibitor is added before the recalcination step is not taught or suggested by the cited art of record.

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Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached at (571) 272-1233.

The fax number for all official communications is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cmk
August 12, 2005


C. Melissa Koslow
Primary Examiner
Tech. Center 1700